

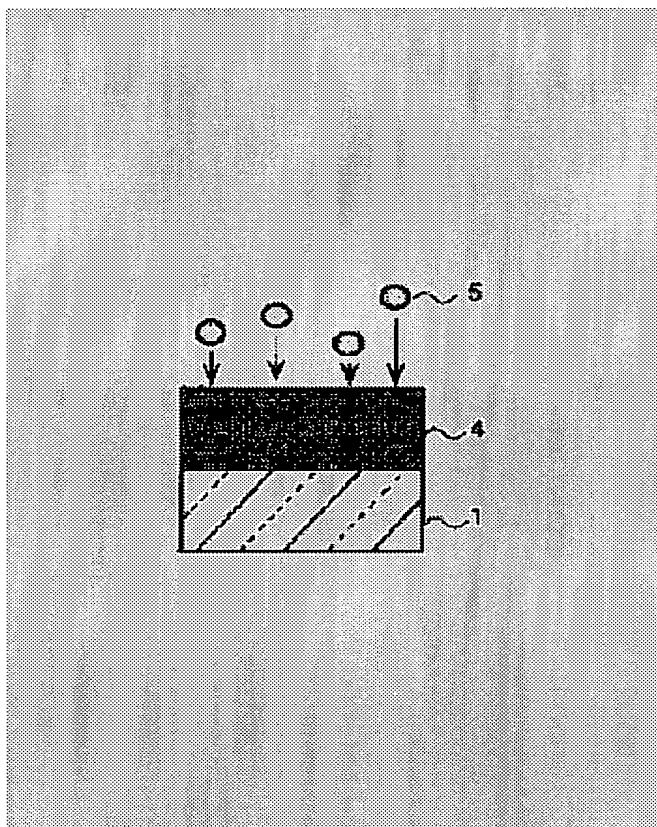
PRODUCTION OF SEMICONDUCTOR THIN FILM

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Abstract of JP9213977

PROBLEM TO BE SOLVED: To provide a production method by which the distribution of VIa-group elements Se and S in the depthwise direction of a $\text{CuIn}(\text{Se},\text{S})_2$ film and a $\text{Cu}(\text{In},\text{Ga})(\text{Se},\text{S})_2$ film constituting the optical absorption layer of a solar cell is controlled and any change is given to the forbidden band width and to provide a solar cell by which high energy conversion efficiency can be obtained by using the $\text{CuIn}(\text{Se},\text{S})_2$ film and $\text{Cu}(\text{In},\text{Ga})(\text{Se},\text{S})_2$ film which are formed by this method.
SOLUTION: A CuInSe_2 film or $\text{Cu}(\text{In},\text{Ga})\text{Se}_2$ film 4 is formed on a substrate covered with a metallic film such as an Mo film, etc., for rear electrode, and atoms or molecules of In and S or compound molecule 5 of In-S is supplied to the surface of the film 4 so as to allow it to react therewith. As a result, the concentration of S decreases gradually from the surface of the film 4 to the depthwise direction thereof, and on the contrary, the concentration of Se increases gradually from the surface of the film 4 to the depthwise direction thereof. Thus, a $\text{CuIn}(\text{Se},\text{S})_2$ and a $\text{Cu}(\text{In},\text{Ga})(\text{Se},\text{S})_2$ having such a distribution of concentration can be produced.



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